3. (Amended) A process according to claim 1, wherein the degree of contamination is measured with the help of one or several oscillators which react to a change in its surface mass by changing resonance frequency.

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4. (Amended) A process according to claim 1, wherein the degree of contamination is determined by reflectivity measurements.

5. (Amended) A process according to claim 1, wherein the degree of contamination is determined ellipsometrically.

6. (Amended) A process according to claim 1, wherein the degree of contamination is determined by measuring a stream of photons.

7. (Amended) A process according to claims 1, wherein the degree of contamination is determined while oxygen is being supplied.

8. (Amended) A process according to claim 1, wherein a precise threshold value is given, whereby exceeding the threshold value results in oxygen in a partial pressure range between $1x10^{-10}$ mbar to $1x10^{-3}$ mbar being added, and in the event that the threshold is not reached, the supply of oxygen being stopped.

9. (Amended) A device for in-situ decontamination of optical elements in an EUV lithography device, comprising: at least one measuring device to measure a degree of contamination of the optical element(s) and a connected control unit, which is connected to a device to supply O_2 to the EUV lithography device, and which is set up to compare the measured degree of contamination with at least one pre-set threshold value, and to control the supply of oxygen in relation to the corresponding comparison results.

10. (Amended) A device according to claim 9, wherein the device has at least one light source for radiation in the wave length range between 150 nm and 300 nm.

11. (Amended) A device according to claim 9, wherein at least one measuring device has at least one quartz crystal microwave set up inside the lithography device.

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12. (Amended) A device according to claim 9, wherein the measuring device has at least one additional light source and at least one detector, which are set up within the lithography device.

13. (Amended) A device according to claim 12, wherein a polarizer is set up in the beam path of at least one light source, near the light source, and an analyzer is set up near the detector.

14. (Amended) A device according to claim 9, wherein the measuring device has the means to measure a stream of photons that are connected to an optical element in the EUV lithography device.

15. (Amended) A device according to claims 9, wherein a measuring device connected to the control unit is set up as a residual gas-measuring device.